APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,459	01/23/2002	Joseph A. Bailey	95-521	6430

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EXAMINER
JUNTIMA, NITTAYA

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/052,459	BAILEY ET AL.
	Examiner	Art Unit	
	Nittaya Juntima	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>07 June 2006</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-13</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-9</u> is/are rejected.

7)☒ Claim(s) <u>10-13</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>07 June 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This action is in response to the amendment filed on 6/7/2006.

2.   The objections to the drawings are withdrawn in view of applicant's amendment.

3.   In view of the applicant's arguments, claims 10-13 are presently objected to as being

dependent upon a rejected base claim, but would be allowable if rewritten in independent form

including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Tzeng et al.

("Tzeng") (USPN 6,912,604 B1).

The applied reference has a common assignee with the instant application. Based upon

the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C.

102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37

CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

inventor of this application and is thus not the invention "by another," or by an appropriate

showing under 37 CFR 1.131.

Regarding claim 1, as shown in Fig. 2, Tzeng teaches a method in a host channel adapter

(HCA 12), the method comprising:

Receiving a work notification request (a work notification request reads on a WQE that

specifies a corresponding request for a corresponding prescribed operation to be performed by a

destination InfiniBand network node, col. 4, lines 28-35) for a specified service level (SL, col. 4,

lines 40-43), each specified service level associated with a prescribed virtual lane (the SL

associates with a VL, col. 4, lines 48-50 and 54-59).

Determining from a link layer module (a link layer module is not term of art and its

structure is not defined, therefore reads on the VL arbitration module 60) an ordering position for

the prescribed virtual lane corresponding to the specified service level relative to other virtual

lanes (col. 5, lines 18-21).

Selectively servicing (outputting) the work notification request (WQE) based on the

corresponding determined ordering position (col. 5, lines 18-28).

Regarding claim 2, Tzeng further teaches that wherein:

The receiving step includes receiving a plurality of work notification requests (WQEs are

received, col. 4, lines 28-35), at least a portion of the work notification requests supplying the

respective specified service levels (each WQE includes SL, col. 4, lines 40-42), the service levels

assigned to a plurality of the prescribed virtual lanes based on a prescribed mapping (col. 4, lines

48-50).

The determining step includes determining an ordering position for at least one of the

prescribed virtual lanes (col. 5, lines 18-21).

The selectively servicing step including selecting a sequence for servicing the work notification requests based on the determined ordering position (col. 5, lines 18-33).

Regarding claim 3, Tzeng also teaches that the selectively servicing step includes first servicing a first (high-priority) group of the work notification requests associated with a first (high-priority, e.g. FIFO 52b) of the prescribed virtual lanes having a first ordering position (high-priority), the first ordering position specifying the virtual lane currently serviced by the link layer module (the VL arbitration module 60 in Fig. 2 would empty the VL FIFO 52b before servicing other virtual lanes, col. 5, lines 14-28, therefore, it is inherent that at one point in time, the high-priority virtual lane FIFO 52b must be currently serviced).

Regarding claim 4, Tzeng teaches that the selectively servicing step further includes second servicing following the first servicing step (high-priority), a second group of the work notification requests associated with a second of the prescribed virtual lanes (the next virtual lane to be serviced having lower priority than the high-priority VL FIFO 52b) having a second ordering position (next priority level lower than the high priority level), based on at least one of completing servicing the first group (last WQE from high-priority VL FIFO 52b completed) and reaching a prescribed threshold (the maximum number of WQEs stored in the high-priority VL FIFO 52b) associated with the first (high-priority) of the prescribed virtual lanes (col. 5, lines 7-9 and 14-28).

Regarding claim 5, Tzeng further teaches that the determining step includes receiving from the link layer module (an inherent element within the VL arbitration module 60 that keeps track of the current virtual lane being processed) processing information specifying a current

virtual lane being processed by the link layer module , the ordering position determined based on

the processing information (since the VL arbitration module 60 determines which virtual lane to

service based on the determined priority of the virtual lanes, col. 5, lines 18-21, therefore, the VL

arbitration module 60 must have an internal element that keeps track and notifies the VL

arbitration module 60 of the current virtual lane being serviced in order to assist the VL

arbitration module 60 to determine the priority of a particular virtual lane relative to other virtual

lanes).

Regarding claim 6, Tzeng teaches a host channel adapter (HCA 12) comprising:

A link layer module (a link layer module is not term of art and its structure is not defined,

therefore reads on the VL arbitration module 60) for selecting one of a plurality of virtual lanes,

for data transfer, based on an identifiable ordering position (priority level) (col. 5, lines 14-21).

A transport layer module (a transport layer module is not term of art and its structure is

not defined, therefore reads on the pre-link module 40) for receiving a work notification request

(a work notification request reads on a WQE that specifies a corresponding request for a

corresponding prescribed operation to be performed by a destination InfiniBand network node,

col. 4, lines 28-35) for a specified service level (SL, col. 4, lines 40-43), the transport layer

module for identifying the virtual lane and the corresponding ordering position associated with

the specified service level, and selectively servicing (outputting) the work notification request

(WQE) based on the identified ordering position for the identified virtual lane (col. 4, lines 4-9,

24-28, 56-59, and col. 5, lines 18-33).

Regarding claim 7, Tzeng further teaches that wherein:

The transport layer module (the pre-link module 40 includes a virtual lane arbitration

module 60, col. 4, lines 4-9 and 23-27) is configured for selecting for servicing from a plurality

of received work notification requests (WQEs are received, col. 4, lines 28-35), a first group of

the received work notification requests for a service level (WQEs include SL, col. 4, lines 40-42)

associated with a first (high priority) of the virtual lanes having a first ordering (high priority)

position at least a portion of the received work notification requests supplying the respective

specified service levels (col. 5, lines 7-11 and 14-28).

Regarding claim 8, Tzeng teaches that the transport layer (the pre-link module 40 which

includes the virtual lane arbitration module 60, col. 4, lines 23-27) is configured for determining

the first ordering (high-priority) position based on identifying the first virtual lane as the one

selected virtual lane (the virtual lane arbitration module 60 would empty the high-priority virtual

lane, e.g. FIFI 52b, before servicing other virtual lanes, col. 5, lines 18-21).

Regarding claim 9, Tzeng also teaches that the transport layer module (the pre-link

module 40 which includes the virtual lane arbitration module 60, col. 4, lines 23-27) is

configured for selecting for servicing, following the first group (high-priority), a second group of

the received work notification requests specifying a service level associated with a second of the

virtual lanes (the next virtual lane to be serviced having lower priority than the high-priority VL

FIFO 52b) having a second ordering position (next priority level lower than the high priority

level), based on at least one of the transport layer module completing servicing the first group

(last WQE from high-priority VL FIFO 52b completed) and the link layer module (the virtual

lane arbitration module 60) reaching a prescribed threshold (the maximum number of WQEs

stored in the high-priority VL FIFO 52b) associated with the first of the virtual lanes(col. 5, lines 7-9 and 14-28).

Response to Arguments

6.   Applicant's arguments filed 6/7/06, with respect to claims 1 and 6, have been fully considered but they are not persuasive.

A.   In the remarks, the applicant argues that Tzeng fails to teach the limitation (i) "receiving a work notification request" and the limitation (ii) "selectively servicing the work notification request based on the identified ordering position" as recited in independent claims 1 and 6.

In response, regarding the limitation (i), Tzeng teaches that "The HCA 12 is configured for receiving data from the central processing unit 14 in the form of work queue elements (WQEs), ... *Each WQE specifies a corresponding request*, from a consumer application executed by the CPU 16..., for a corresponding prescribed operation to be performed by a destination InfiniBand^{TM} network node..for example a target 18a" (col. 4, lines 28-35). Since neither the structural nor function of the claimed work notification request is further defined and the claimed work notification request is not a term of art, the Examiner is interpreting the claimed work notification request as a WQE which *specifies* (notifies) *a corresponding request for a corresponding prescribed operation* (a work request) to be performed by the destination node and received by the HCA 12. Hence, Tzeng teaches the work notification request as claimed.

It is noted that the features upon which applicant relies (i.e., the claimed work notification request is used to notify the claimed host channel adapter of the storage of the WQE in system memory, and the claimed work notification request serves as a notification to the host

channel adapter of the work queue entry as stated on pages 8 and 9 of the remarks) are not

recited in the rejected claim(s). Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988

F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In addition, the claims are not written in a means

plus function language, therefore, a 35 U.S.C. 112, Sixth paragraph does not apply.

In response, regarding the limitation (ii), Tzeng teaches that *"The VL arbitration module*

60 also determines which virtual lane to service, and outputs the WQEs from the virtual lane

FIFOs 52 based on the determined priority of the virtual lanes...The VL arbitration module 60

would then selectively output the WQEs from the virtual lane FIFOs 52c, 52d, 52e, or 52f based

on weighted priorities stored in respective weight tables within the VL arbitration table 58" (col.

5, lines 18-33). Since "servicing" is not further defined, the Examiner is interpreting the claimed

"selectively servicing the work notification request based on the identified ordering position" as

selectively outputting (servicing) the WQE (the work notification request) based on the

determined priority of the virtual lanes (the identified ordering position for the prescribed virtual

lane corresponding to the specified service level relative to other virtual lanes).

It is clear from the explanation above that Tzeng teaches each and every element of the

claims. Therefore, the rejection is sustained.

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

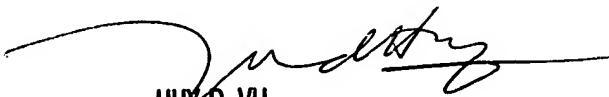date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Nittaya Juntima whose telephone number is 571-272-3120. The

examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy Vu can be reached on 571-272-3155. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nittaya Juntima
August 8, 2006
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